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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,038	07/18/2003	Mitsuru Kitamura	U014728-4	6460
7590 04/22/2004			EXAMINER	
Ladas & Parry 26 West 61st Street New York, NY 10023			STULTZ, JESSICA T	
			ART UNIT	PAPER NUMBER
			2873	

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/623,038

Applicant(s)

KITAMURA ET AL.

Examiner

Jessica T Stultz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 37-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 37-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/932,006.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0703.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

Claim 40 is objected to because of the following informalities: "has a specific, optical property" should be "has a specific optical property". Appropriate correction is required.

### ***Priority***

Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows: An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)). The specific reference to any prior nonprovisional application must include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number.

### ***Specification***

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 37, 40, and 43 are rejected under 35 U.S.C. 102(b) as being unpatentable by Amako et al (embodiments 1-2).

Specifically regarding claim 37, Amako et al (embodiments 1-2) discloses an optical element consisting of a set of a plurality of three-dimensional cells (Column 4, lines 25-29, wherein the three-dimensional cells are pixels “311” of the optical element, liquid crystal display “301”, Figure 3b), wherein: a specific amplitude and a specific phase are defined in each individual cell (Column 6, lines 19-26, wherein the second embodiment differs from the first since the LCD is electrically controlled and wherein both the phase and amplitude data is contained within Fourier transforms in computer-generated holograms, Figures 6-7) and said individual cells have a specific optical property (Column 4, lines 37-44, wherein each pixel “311” has different Fourier data and therefore modulates the incident light independently) so that, when incident light is provided to the cell, emission light is obtained by changing an amplitude and a phase of the incident light (Column 1, lines 33-40, wherein the light is phase and amplitude modulated by the liquid crystal display) in accordance with the specific amplitude and the specific phase defined in the cell (Column 3, lines 47-55, wherein the computer-generated hologram on liquid crystal device “106”, later referred to as “301”, determines the modulation of the incident light, Figure 1); wherein each individual cell has an amplitude-modulating part provided with transmittance corresponding to a specific amplitude (Column 6, lines 5-15, wherein the transmittance is related to the voltage applied to the element, Figure 7).

Specifically regarding claim 40, Amako et al (embodiments 1-2) discloses an optical element consisting of a set of a plurality of three-dimensional cells (Column 4, lines 25-29, wherein the three-dimensional cells are pixels “311” of the optical element, liquid crystal display

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“301”, Figure 3b), wherein: a specific amplitude and a specific phase are defined in each individual cell (Column 6, lines 19-26, wherein the second embodiment differs from the first since the LCD is electrically controlled and wherein both the phase and amplitude data is contained within Fourier transforms in computer-generated holograms, Figures 6-7) and said individual cells have a specific optical property (Column 4, lines 37-44, wherein each pixel “311” has different Fourier data and therefore modulates the incident light independently) so that, when incident light is provided to the cell, emission light is obtained by changing an amplitude and a phase of the incident light (Column 1, lines 33-40, wherein the light is phase and amplitude modulated by the liquid crystal display) in accordance with the specific amplitude and the specific phase defined in the cell (Column 3, lines 47-55, wherein the computer-generated hologram on liquid crystal device “106”, later referred to as “301”, determines the modulation of the incident light, Figure 1); but does not specifically disclose that the each cell has an amplitude-modulating part provided with reflectivity corresponding to a specific amplitude. However, it is inherent from Amako et al (embodiments 1-2) that the disclosed optical element further includes each cell having an amplitude-modulating part provided with reflectivity corresponding to a specific amplitude, this being reasonably based upon the fact that whatever light is not transmitted will be reflected and therefore, there will be a value of reflection, whether it be zero, 100 percent, or a value in between, related to this transmission.

Specifically regarding claim 43, Amako et al (embodiments 1-2) discloses an optical element consisting of a set of a plurality of three-dimensional cells (Column 4, lines 25-29, wherein the three-dimensional cells are pixels “311” of the optical element, liquid crystal display “301”, Figure 3b), wherein: a specific amplitude and a specific phase are defined in each

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individual cell (Column 6, lines 19-26, wherein the second embodiment differs from the first since the LCD is electrically controlled and wherein both the phase and amplitude data is contained within Fourier transforms in computer-generated holograms, Figures 6-7) and said individual cells have a specific optical property (Column 4, lines 37-44, wherein each pixel “311” has different Fourier data and therefore modulates the incident light independently) so that, when incident light is provided to the cell, emission light is obtained by changing an amplitude and a phase of the incident light (Column 1, lines 33-40, wherein the light is phase and amplitude modulated by the liquid crystal display) in accordance with the specific amplitude and the specific phase defined in the cell (Column 3, lines 47-55, wherein the computer-generated hologram on liquid crystal device “106”, later referred to as “301”, determines the modulation of the incident light, Figure 1); but does not specifically disclose that the each cell has an amplitude-modulating part provided with an effective area corresponding to a specific amplitude. However, it is inherent from Amako et al (embodiments 1-2) that the disclosed optical element further includes each cell having an amplitude-modulating part provided with an effective area corresponding to a specific amplitude, this being reasonably based upon the modulation being determined by the holographic image presented onto the liquid crystal device, which could cover part of the display or all of the display, wherein the covered section is considered the effective area (Column 3, lines 47-55, wherein the computer-generated hologram on liquid crystal device “106”, later referred to as “301”, determines the modulation of the incident light, Figure 1).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 38, 41, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amako et al (embodiments 1-2) in view of Amako et al (embodiment 20).

Regarding claim 38, 41, and 44, Amako et al (embodiments 1-2) discloses an optical element as is disclosed above wherein each cell has a phase-modulating part, but does not specifically disclose that the phase-modulating part has a refractive index corresponding to a specific phase. Amako et al (embodiment 20) teaches of an optical element wherein each cell has a phase-modulating part with a refractive index corresponding to a specific phase (Column 6, line 60-Column 7, line 23, wherein the hologram is phase modulated and the photosensitive material "2202a" has different refractive indices corresponding to the phase on liquid crystal device "2103", Figures 21 and 22a-d) so that the electrical conductivity of the photosensitive material can be changed accordingly (Column 14, lines 41-54, Figures 21 and 22a-d). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the optical element of Amako et al (embodiments 1-2) to include each cell having a phase-modulating part with a refractive index corresponding to a specific phase since Amako et al (thirteenth embodiment) teaches of an optical element wherein each cell has a phase-modulating part with a refractive index corresponding to a specific phase, so that the electrical conductivity of the photosensitive material can be changed accordingly.

Claims 39, 42, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amako et al (embodiments 1-2).

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Regarding claim 39, 42, and 45, Amako et al (embodiments 1-2) discloses an optical element as is disclosed above wherein each cell has a phase-modulating part, but does not specifically disclose that the phase-modulating part has an optical path length corresponding to a specific phase. However, it would have been obvious for the phase-modulating part to have an optical path length corresponding to a specific phase, this being reasonably based upon it being well known in the art of light modulation that the optical path can be changed respectively depending on the phase change provided. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the optical element of Amako et al (embodiments 1-2) to include each cell having a phase-modulating part to have an optical path length corresponding to a specific phase, since during phase modulation, the optical path can be changed respectively depending on the phase change provided.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shimura is cited as having some similar structure to the claimed invention.

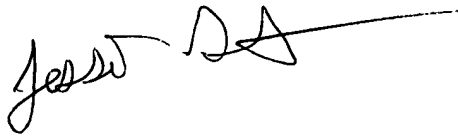
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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April 14, 2004



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